UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,604	07/20/2006	Defeng Li	069978-0020	5739

20277 7590 05/05/2009

MCDERMOTT WILL & EMERY LLP
600 13TH STREET, N.W.
WASHINGTON, DC 20005-3096

EXAMINER	
SHEHNI, GHAZAL B	
ART UNIT	PAPER NUMBER
2433	
MAIL DATE	DELIVERY MODE
05/05/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/586,604	LI ET AL.	
	Examiner	Art Unit	
	GHAZAL SHEHNI	2433	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 March 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14 and 16* is/are rejected.

7)☒ Claim(s) *15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The following is a final office action in response to communications received March 17, 2009. Claims 1-16 are pending in this application, of which claims 1 and 7 are independent. Claims 1, 6-8, and 13-15 have been amended.

Response to Amendment

Applicant's amendments to the claims are sufficient to overcome the 35 USC 112, second paragraph, rejections set forth in the previous office action.

Response to Remarks/Arguments

Applicant's arguments filed 03/17/2009 have been fully considered but they are not persuasive. In the remark, Applicant argues that

(1) Applicant's argues that Sturges fails to teach "***determining whether both a service data receiving site and a service data sending sites have a quality of service requirement***".

In response to argument (1), Examiner respectfully disagrees. Sturges discloses determining whether both the service data receiving site and a service data sending sites have a quality of service requirement (packets are identified and marked for priority on the customer's network, thereby enabling and enforcing end-to-end quality of services over both local and backbone networks. With local detecting and marking, the

local server gives a customer with the ability to automatically provision the QoS of services based on applications and priorities established for those applications, as well as directory services and address management for address reuse within the customer's premise. Identifying the start and the stop of a QoS guaranteed session allows charging based on sessions as opposed to per packet, see [0014] lines 11-12, also see fig.4 step 406 and [0047] lines 1-16). Therefore Examiner maintains that Sturges teaches and suggests this amended limitation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 7, 8, 10, and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (Pub No. EP1294202) in view of. Sturges et al (Pub No. US 2002/0114274).

As per claim 1, Chen discloses a system for ensuring quality of service in a virtual private network (**see an effective way for combining the virtual private network (VPN) provisioning with QoS)([0008] lines 11-12)**, comprising:

a logical bearer network (**IP bearer service, [0041] line 1, also see backbone network service, [0043] line 1)**, which is formed by connecting label switch paths

configured with preserving bandwidth to routers over a basic IP network with multi-protocol label switch, and is dedicated to transmit service data with quality of service requirement **(the backbone network service covers the layer 1/layer2 functionality and is selected according to operator's choice in order to fulfill the QoS requirements of the Core Network Bearer Service)(see [0043] lines 1-5) (also see QoS Resource or Bandwidth reservation on [0037] lines 1-13)**; and a bearer control network **(see IP Bearer Service Manager, [0041] lines 1-2)**, allocates route for the service **(see selecting, setting up and configuring the MPLS label switch path, [0047] lines 1-4), Chen discloses** the encapsulation of data packet **(see [0021] lines 3-8) (also see [0034] line 7). Chen also teaches routing the service data to opposite end via the logical bearer network in accordance with the allocated route but Chen does not disclose** marking priority of the service in the quality of service field of route label corresponding to multi-protocol label switch data packets as claimed and a bearer control network to maintain the logical bearer network, and determine whether both a service data receiving site and a service data sending site have a quality of service requirement, Wherein, if both the service data receiving and sending sites have the quality of service requirement, the bearer control network **However Sturges discloses a priority marking of the quality service of route corresponding to multi protocol label switch data packets (see the priority marking is used between the access router and edge router to provide the signaling between customer network and backbone network that allows classifying traffic on the backbone network (in page 6 [0043] lines 7-15 see also**

label switch path in page 3 [0024] lines 4-5) and a bearer control network to maintain the logical bearer network, and determine whether both a service data receiving site and a service data sending site have a quality of service requirement (packets are identified and marked for priority on the customer's network, thereby enabling and enforcing end-to-end quality of services over both local and backbone networks. With local detecting and marking, the local server gives a customer with the ability to automatically provision the QoS of services based on applications and priorities established for those applications, as well as directory services and address management for address reuse within the customer's premise. Identifying the start and the stop of a QoS guaranteed session allows charging based on sessions as opposed to per packet, see [0014] lines 11-12, also see fig.4 step 406 and [0047] lines 1-16). **Therefore it would have been obvious to one ordinary skill in the art at the time the claimed invention was made to use Sturges in Chen for including the priority of the quality service of route label corresponding to the multi protocol label switch data packets as claimed and for determining that both service data receiving and sending sites have the quality of service requirement because one ordinary skill in the art would recognize that it would have made the traffic flows normal and enhancing the end-to-end quality of service in the data packets.**

As per claims 7 and 10, the combination of Chen and Sturges teaches a method for ensuring quality of service in a virtual private network **(See Chen's an effective way for combining the virtual private network (VPN) provisioning with QoS)([0008]**

lines 11-12), comprising the steps of:

A. in a basic IP network, constructing a logical bearer network dedicated to transmit service data with quality of service requirement by configuring label switch paths with preserved bandwidth with multi-protocol label switch **(See Chen's the backbone network service covers the layer 1/layer2 functionality and is selected according to operator's choice in order to fulfill the QoS requirements of the Core Network Bearer Service) (see [0043] lines 1-5) (also see QoS Resource or Bandwidth reservation on [0037] lines 1-13)**;

B. providing a centralized resource controller **(See Sturges's page 3 [0027] lines 8-9)**, to centrally manage resources of the logical bearer network; and

C. determining whether both a service data receiving site and a service data sending site have a quality of service requirement (packets are identified and marked for priority on the customer's network, thereby enabling and enforcing end-to-end quality of services over both local and backbone networks. With local detecting and marking, the local server gives a customer with the ability to automatically provision the QoS of services based on applications and priorities established for those applications, as well as directory services and address management for address reuse within the customer's premise. Identifying the start and the stop of a QoS guaranteed session allows charging based on sessions as opposed to per packet, see [0014] lines 11-12, also see fig.4 step 406 and [0047] lines 1-16); and

D. if both the service data receiving and sending sites have the quality of service requirements, marking priority of the service **(See Sturges's discloses a priority**

marking of the quality service of route corresponding to multi protocol label switch data packets (see the priority marking is used between the access router and edge router to provide the signaling between customer network and backbone network that allows classifying traffic on the backbone network (in page 6 [0043] lines 7-15 see also label switch path in page 3 [0024] lines 4-5)) in the quality of service field of the routing labels corresponding to the multi-protocol label switch data packets encapsulated **((See Chen's [0021] lines 3-8) (also see [0034] line 7))** from the service data stream, and routing the service data to the opposite end via the logical bearer network in accordance with the route allocated **(See Chen's selecting, setting up and configuring the MPLS label switch path, [0047] lines 1-4)** by the centralized resource controller **(See Sturges's page 3 [0027] lines 8-9)**.

Chen did not teach a centralized resource controller and marking priorities However, Sturges teaches a centralized resource controller and also marking priorities. Therefore It would have been obvious to one ordinary skill in the art at the time the claimed invention was made to use Sturges in Chen for including a centralized resource controller and the priority of the quality service of route label corresponding to the multi protocol label switch data packets as claimed because by providing a centralized resource controller, the logical bearer network would have been manage centrally and also by marking priorities it would have made the traffic flow normal in the data packets.

As to the same value in claim 10, examiner holds that in order to have the quality

of service field of all labels in the service route label stack must have the same value.

As per claim 8, the combination of Chen and Sturges, also teaches the method for ensuring quality of service in a virtual private network according to claim 7, further comprising the following step between step B and step C: the centralized resource controller calculating access paths between the sites and issuing the access paths between the sites to the routers of virtual private network, so that the routers can store the routes **(See Sturges's Transporting data in packets allows the same data path to be shared among many users in the network. When a router receives a packet of data from another router, it stores the packet in a queue, page 1 [0005] lines 5-11)** allocated by the centralized resource controller.

As per claim 12, the combination of Chen and Sturges also teaches the method for ensuring quality of service in a virtual private network according to claim 7, wherein in the step C, the priority of the service **(See Sturges's a priority marking of the quality service of route corresponding to multi protocol label switch data packets (see the priority marking is used between the access router and edge router to provide the signaling between customer network and backbone network that allows classifying traffic on the backbone network (in page 6 [0043] lines 7-15 see also label switch path in page 3 [0024] lines 4-5))** is determined by type of the service.

As per claim 13, the combination of Chen and Sturges also teaches the method for ensuring quality of service in a virtual private network according to claim 7, further comprising the steps of:

if both the service data receiving and sending sites have no quality of service requirement; transmitting the service data with other resources in the basic IP network **(Sturges: transporting data in packets allows the same data path to be shared among many users in the network. When a router receives a packet of data from another router, it stores the packet in a queue. The router then sequentially examines each packet and decides to what node the packet will be next sent based on its address. Without additional reliability mechanisms or services in place, packet based networks provide only a best effort level of service. Availability of resources in not guaranteed, Paragraph [005], also see fig.4 step 406 and [0047] lines 1-16)**.

As per claim 14, the combination of Chen and Sturges also teaches the method for ensuring quality of service in a virtual private network according to claim 7, further comprising the following step before the step of determining whether both the service data sending sites and receiving sites have a quality of service requirement: **(See Sturges's fig.4 element 406 also see page 6 [0047] lines 1-16)** comparing route targets of the sending sites and receiving sites, and determining whether the connectivity between the sending sites and receiving sites is a general connectivity **(See Sturges's service authorization, page 6 [0047] lines 6-7)**; if so, proceeding to the

next step; otherwise terminating the process.

Claims 2-6, 11 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (Pub No. EP1294202) in view of Sturges et al (Pub No. US 2002/0114274) as applied to claim 1 above and further in view of Casey (Pat No. US 6493349).

As per claim 2, Chen discloses the system for ensuring quality of service in a virtual private network **(see an effective way for combining the virtual private network (VPN) provisioning with QoS) ([0008] lines 11-12)** according to claim 1, and maintaining network topology of the logical bearer network, performing resource calculation **(the backbone network service covers the layer1/ layer2 functionality and is selected according to operator's choice in order to fulfill the QoS requirements of the Core Network Bearer Service) (See [0043] lines 1-5) (also see QoS Resource or Bandwidth reservation on [0037] lines 1-13)** and traffic route selection, sending traffic route indications to the routers, allocating resources and performing access control in the logical bearer network **(see selecting, setting up and configuring the MPLS label switch path, [0047] lines 1-4).**

However Chen does not disclose a centralized resource controller for managing network resources in the logical bearer network. However **Sturges discloses** the bearer control network comprises centralized resource controllers **(page 3 [0027] lines 8-9)** for managing network resources in the logical bearer network, **on the other hand Sturges does not disclose** maintaining membership information and connectivity

information for each the virtual private network to implement automatic detection and unilateral configuration of the membership. **However Casey discloses Virtual Private Network membership in (col.3 line 12 and also col.6 lines 38-41). Therefore it would have been obvious to one ordinary skill in the art at the time the claimed invention was made to use Sturges in Chen for including the priority of the quality service of route label corresponding to the multi protocol label switch data packets as claimed because it would make the traffic flow normal in the data packets and to use Casey for maintaining membership information so that expected QoS can be ensured for all accessed services.**

As per claim 3, **the combination of Chen, Sturges and Casey also discloses** each domain of the logical bearer network provided with one centralized resource controller that are connected with each other, to exchange topology and resource information of the logical bearer network and routing information of the virtual private network. the system for ensuring quality of service in a virtual private network according to claim 2, wherein each domain of the logical bearer network is provided with one centralized resource controller **(See Sturges's page 3 [0027] lines 8-9)**; the centralized resource controllers are connected with each other, to exchange topology and resource information of the logical bearer network and routing information of the virtual private network **(See Sturges's page 3 [0025] lines 1-5 also see interconnection between different VoIP domains and to other voice networks. The network server is a**

central point for collecting resource information, [0026] lines 1-5).

As per claim 4, **the combination of Chen, Sturges and Casey also disclose** routes distribution and maintaining membership for the virtual private network. **(See Casey discloses routes distribution** in **a VPN which is a group of individual private networks logically connected through one or more shared networks. VPNs are formed by distributing VPN information throughout the shared network(s), and forming tunnels between VPN routers which are members of a common VPN) (see col2. and col.3 lines 66-67 and 1-3 respectively)** and maintaining membership for the virtual private network, and maintain connectivity between sites in the virtual private network in an out-of-band mode **(col.3 line 12 and also col.6 lines 38-41)**.

As per claim 5, the combination of **Chen, Sturges and Casey also teaches the provider edge routers, intermediate transfer router, and core routers. See Sturges discloses** the system for ensuring quality of service in a virtual private network according to claim 2, wherein the routers comprise: provider edge routers **(fig.2 element 108)**, intermediate transfer routers **(fig.2 element 106)**, and core routers **(fig2. element 225)**; wherein the provider edge routers **(fig.2 element 108, also see page 6 [0043] line 1)** are used to identify the virtual private network with quality of service requirement, encapsulate service data with quality of service requirement entering from the virtual private network with label stack **(see "priority queues" page 3 [0024] lines 15-19)** designated by the centralized resource controller **(see page 3 [0027] lines 8-9)**,

set quality of service field of all labels in the label stack in accordance with the service priority, and transmits encapsulated service data packets via the logical bearer network **(see the edge routers process traffic arriving from customer and classify packets based on ingress port, priority marking, page 6 [0043] lines 1-13)**;
the intermediate transfer routers **(fig.2 element 106, also see access router, page 5 [0040] line 1)** are used to implement static or dynamic configuration of label switch paths, DiffServ-aware multi-protocol label switch, and stream processing by type of service **(see page 5 [0040] lines 1-10)**;
the core routers **(fig.2 element 225, also see core routers, page 5-6 [0042] line 18)** are used to implement DiffServ-aware multi-protocol label switch and stream processing by type of service **(see page 5-6 [0042] lines 16-23 also see [0043] lines 13-15)**.

As per claim 6, the combination of Chen, Sturges, and Casey also teaches the system for ensuring quality of service in a virtual private network according to claim 2, **(See Chen's an effective way for combining the virtual private network (VPN) provisioning with QoS) ([0008] lines 11- 12)**, wherein the centralized resource controller **(See Sturges discloses the centralized resource controller (page 3 [0027] lines 8-9)** comprises an interface management module **(See Casey's col.6 lines 21-25 also see fig.2 "PR" section and VPN Area 1/2)** , a protocol processing module **(See Sturges's fig.2 see Network server (being a centralized controller) and Network Policy/ Public Directory (external Devices)**, a membership maintenance module **(See Casey's col.3 lines 12-14)**, a topology and resource management module **(See**

Casey's col.7 line 4-5), a route management module **(See Casey's col.4 31-35)**, and an automatic signaling detection module **(See Sturges's page 6 [0043] line 9 and also see "police traffic" page 5 [0041] line 6 and page 4 [0029] line 1)**; wherein the interface management module is used to implement and manage the communication interface between the virtual private network and an external device **(See Casey's col.6 lines 21-25 and fig.2, VPN Area 1 or 2 and external device "PR")**; the protocol processing module is used to process protocols for communication **between** the centralized resource controller and an external device **(See Sturges's fig.2 see Network server (being a centralized controller) and Network Policy/ Public Directory (external Devices)**, and forward the data to the membership maintenance module **(See Casey's col.3 lines 12-14)**, topology and resource management module **(See Casey's col.7 line 4-5)**, route management module **(See Casey's col.4 31-35)**, and automatic signaling detection module **(See Sturges's page 6 [0043] line 9 and also see "police traffic" page 5 [0041] line 6 and see page 4 [0029] line 1)** in accordance with the protocol; the protocol processing module receives/sends data via the interface management module; the membership maintenance module is used to maintain the membership information of the virtual private network and connectivity information between sites of the virtual private network **(See Casey's col.3 lines 12-14 also see col.6 lines 38-41)**;

the topology and resource management module is used to manage the topological relationship and resources of the logical bearer network **(See Casey's col.7 line 4-12)**;

the route management module is used to manage the routing relation of the virtual private network **(See Casey's col.4 31-35 also see col.6 lines 44-56)**;

and the automatic signaling detection module **(See Sturges's page 6 [0043] line 9 and also see "police traffic" page 5 [0041] line 6 and page 2 [0014] lines 4-10)** is used to detect changes automatically, and notify the membership maintenance module and the topology and resource management module to correct information corresponding to the changes **(e.g. see Sturges's classified traffic as the corresponding information) (page 6 [0043] lines 7-13)**.

As per claim 11, the combination of Chen, Sturges, and Casey also teaches the method for ensuring quality of service in a virtual private network according to claim 7, further comprising the step of: adjusting the topology **(See Casey's network topology and traffic engineering in col.4 lines 1-7 and also col.7 lines 4-12)** and resources of the logic bearer network dynamically with multi-protocol label switch traffic engineering.

As per claim 16, the combination of Chen, Sturges, and Casey also teaches the method for ensuring quality of service in a virtual private network according to claim 7, wherein the route allocated by the centralized resource controller to each pair of sites with quality of service requirement is unique **(See Casey's col. 6 lines 38-43)**.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (Pub No. EP1294202) in view of Sturges et al (Pub No. US 2002/0114274) as applied to claim 7 above and further in view of Mauger et al (Pat No. US 6882643).

As per claim 9, Chen, Sturges do not teach the route is a serial labels witch path. However Mauger discloses (in col.1 lines 56-62) a **multiprotocol label switching network, the method including defining a plurality of first level paths across the multiprotocol label switching network, defining a second level path comprising a concatenated series of said first level paths attaching a label to the information packet indicative of said second level path at ingress to the multiprotocol label switching network. Therefore it would have been obvious to one ordinary skill in the art at the time the claimed invention was made to use Mauger in Chen for including the serial label switch path in a virtual private network as claimed because it would provide Chen the ability to ensure the better liability of the route.**

Allowable subject matter

Claim 15 is objected to as being dependent upon a rejected base claim 7, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the prior arts of records further teaches determining whether both the service data receiving and sending sites have a quality of service requirement is performed in the following way: determining whether the connectivity between the receiving and sending sites is a connectivity with

quality of service requirement by comparing the route targets of the receiving and sending sites; if yes, determining the service between the sending sites and receiving sites has a quality of service requirement; otherwise determining the service between the receiving and sending sites has no quality of service requirement.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GHAZAL SHEHNI whose telephone number is (571)270-7479. The examiner can normally be reached on Monday-Thursday & every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Moazzami Nasser can be reached on 571-272-4195. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/GHAZAL SHEHNI/
Examiner, Art Unit 2433

/Carl Colin/
Primary Examiner, Art Unit 2433